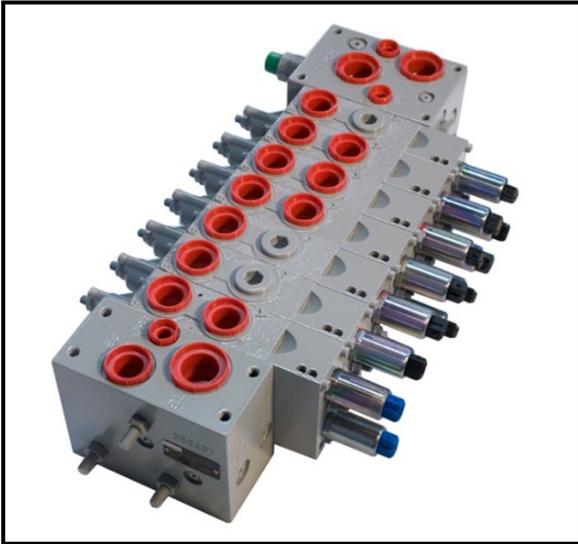


Compu-Spread M4-12 Stackable Hydraulic Control Valve

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► M4-12 hydraulic control valve assembly for Snow & Ice Control vehicle hydraulic system, shown with electro-hydraulic valve actuators for Spinner, Conveyor, Liquid, Hoist and 3 bi-directional Plow functions, with power beyond end cover

Rexroth's M4-12 stackable valve assemblies are reliable performers for the control all of the hydraulic functions on thousands of large and mid-size Snow & Ice Control vehicles. The precisely machined metering notches in each valve spool provides a defined orifice size for a given spool position. The individual section compensator ensures that the hydraulic flow rate at that position remains the same regardless of changes in up- or downstream pressure, thereby ensuring constant speed of the actuator being controlled. Each actuator port is connected to the load sense (LS) network when in use. The M4 is available for open and closed-center systems, with primary system pressure relief integral to both versions.

Open-center systems (with fixed displacement pump) have an unloading valve which directs pump flow to tank when no functions are required. When activated, the load pressure signal is sent to the unloader such that system pressure is just above load pressure, ensuring the maximum efficiency possible with these circuits.

Closed-center systems (with variable displacement load sensing pumps) provide even higher system efficiency. In this version the load pressure signal is sent to the Rexroth A..VO pump controller, so that it de-strokes at standby pressure when no functions are required.

The main valve spool can be activated in many ways: manually (cable or lever), electro-hydraulically (on/off or proportional), with air (on/off or metered), hydraulically, or any combination of these in one valve assembly.

Features

- Hydraulic load sensing provides maximum energy efficiency, whether in open or closed-center version
- Valve assemblies are made to order, ensuring optimum metering resolution for all actuators
- Very high flow rate repeatability and low hysteresis
- Integral pilot circuit pressure reducing/relief valve
- Both lateral and mid-inlet versions are available
- Individual Load Sense Relief Valves allow reduced pressure setting in associated part of circuit
- Maximum flow rates per valve section can be set with adjustable main spool stroke limiters
- Manual overrides on electro-hydraulic pilot valves facilitate start-up and potential service matters
- Up to 16 slices/functions in one valve assembly
- All main fluid ports can be on one surface, facilitating plumbing to actuators and other devices

M4-12 Hydraulic Control Valve

Technical Data (data extract—for full details refer to Rexroth data sheet RA 64 276)

Valve System	Load Sensing (LS) with individual section inlet compensator	
Design	Stackable Sandwich Plate Design	
Hydraulic		
Maximum inlet flow lateral inlet/mid-inlet	40 gpm / 52 gpm	150 l/min / 200 l/min
Maximum flow from work ports (A, B)	34 gpm	130 l/min
Maximum Pressure—inlet (P & LS ports)	5000 psi	350 bar
Work ports (A, B)	6000 psi	420 bar
Tank line (T)	435 psi	30 bar
Pilot Pressure (X)	500 psi	35 bar
Pilot Pressure Drain (Y)	0 psi	0 bar
LS Pressure Relief adjustment range	725 to 2150 psi or 2175 to 5000 psi	50 to 149 bar or 150 to 350 bar
Pilot Pressure Range—hydraulic	125 to 325 psi	8.5 to 22.5 bar
Electro-hydraulic	100 to 250 psi	6.5 to 17.2 bar
Pneumatic (air)	40 to 90 psi	3 to 6 bar
Secondary valves available on DCV functions	port relief with integral anti-cavitation (some restrictions)	
Fluid	Mineral oil to DIN 51524 or ATF; refer to Rexroth data sheet RE 90220 for more details	
Fluid operating temperature range	14° to 176° F	-20° to 80° C
Fluid cleanliness recommendation	per ISO 4406 (c): 19/17/14	
Fluid viscosity	42 to 2000 SUS (60 to 500 preferred)	5 to 400 cSt (10 to 100 preferred)

Fluid Connections

Pressure (P)	#16 SAE "O" Boss
Tank (T, T1) lateral inlet / mid-inlet	#16 SAE "O" Boss / #20 SAE "O" Boss
Work ports (A, B)	#12 SAE "O" Boss (#10 SAE "O" Boss, when port reliefs are fitted)
Load sense port, Gauge (LS, GP)	#6 SAE "O" Boss
Pilot pressure—hydraulic	#4 SAE "O" Boss
Pilot pressure—pneumatic (air)	1/8" NPTF

Electrical

Proportional pilot valve solenoids	12 VDC, 1800 mA, 2.4 Ω @ 68°F (20°C), 150 Hz PWM (dither) frequency (RE58032)
On/off pilot valve solenoids	12 VDC, 14.4 W, 10 Ω @ 68°F (20°C), 100% duty cycle (Rexroth data sheet RE58007)
Connector (all pilot valves); protection level	Junior Timer, 2 pin (AMP); IP 65 (or 67, mating connector dependent) to DIN 40050

Weights

Inlet section: lateral / mid-inlet	26.5 / 41 lbs.	12 / 18.5 kg
Valve: hydraulic / mechanical / electro-hydraulic	9 / 11 / 10.5 lbs.	4.2 / 4.9 / 4.5 kg
End section: standard / Power Beyond	6 / 20 lbs.	2.6 / 9 kg

Environmental

Directional control valve housings are of nodular iron, with some aluminum trim. Installation in a sealed enclosure will extend the life of all external surfaces and components, which would otherwise be exposed to the harsh environment found in snow and ice control applications.

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